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THE
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☞See advertisement on last page.

Poetry.

SPARE THE BIRDS.

BY REV. GEORGE W. BETHUNE, D. D.

Spare, spare the gentle bird,
Nor do the warbler wrong,
In the greenwood is heard
Its sweet and happy song;
Its song so clear and glad
Each listner's heart hath stirr'd
And none, however sad,
But blessed that happy bird.

And when at early day
The farmer trod the dew,
It met him on the way
With welcome blithe and true;
So, when at weary eve,
He homewards wends his way,
Full sorely he would grieve
To miss the well-loved lay.

The mother, who had kept
Watch o'er her wakeful child
Smiled as the baby slept,
Soothed by its wood notes wild:
And gladly had she flung
The casement open free,
As the dear warbler sang
From out the household tree.

The sick man on his bed
Forgets his weariness,
And turns his feeble head
To list its songs that bless
His spirit like a stream
Of mercy from on high,
Or music in the dream
That seals the prophet's eye

O! laugh not at my words,
To warn your childhood's hours.
Cherish the gentle birds—
Cherish the fragile flowers;
For since man was bereft
Of paradise, in tears,
God the sweet thing hath left,
To cheer our eyes and ears.

THE WANDERING WIND.

The wind, the wandering wind
Of golden summer eves:
Whence is the thrilling magic
Of its tones among the leaves.

Oh, is it from the waters,
Or from the long tall grass,
Or is it from the hollow rocks
Through which its breathings pass?

Or is it from the voices
Of all in one combined,
That it wins the tone of mastery?
The wind, the wandering wind!

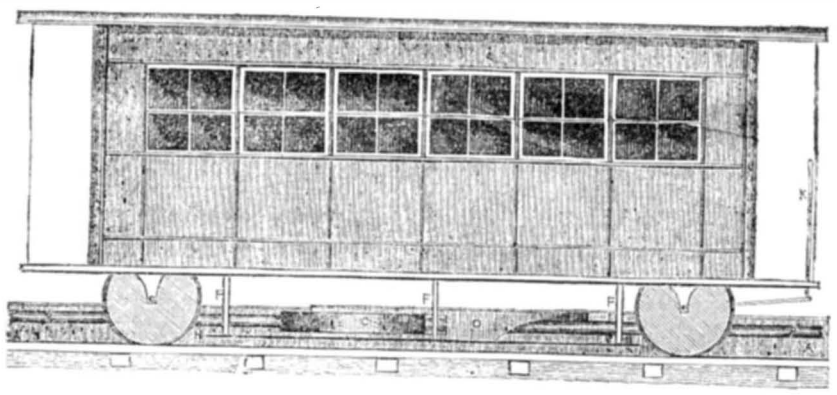
No, no, the strange sweet accents
That with it come and go,
They are not from the osiers,
Or the fir-trees whispering low

They are not of the river,
Nor of the caverned hill;
'Tis the human love within us
That gives them power to thrill.

They touch the links of memory
Around our spirits twined,
And we start and weep, and tremble,
To the wind, the wandering wind.

AVERY'S

IMPROVED ATMOSPHERIC RAILWAY.---Figure 1.



This is the invention of Mr. Ira Avery, of Tunckhannock, Wyoming County, Pa. The object of it is to propel cars by atmospheric pressure, for greater economy and safety on our railroads. The safety of it consists in the impossibility of the cars getting off the track, and the economy of it consists in the using only of stationary engines to start the cars thereby saving both friction and wear on the rails. Tubes are made of a strong flexible material such as Gutta Percha, and laid along lengthwise the centre of the track. On the car are hung wheels that press against the air tight centre tube or tubes, so as to keep the air that may be pressed into said tubes behind the cars, free from being able to pass through between the wheels or rollers that press upon the central air tubes and thus drive forward the train as long as the current of air is kept up.

Figure 1, is a perspective view. (A road may be formed by securing two lines of iron to the cross rails, placed so far apart as to allow friction rollers working between them and to rest upon them placed at equal distances apart, from three to six feet, along the whole line in two rows, forming the tracks of common width.) This view represents the car placed upon a wheel truck, although if friction wheels or pullies were laid along the track and the cars to roll on them the same object would be obtained, but the wheel cars and the rail track will be cheapest. The wheels are represented as moving on the rails. A, is the central bearer to which the air tubes are connected. F F, are standards of the car to which the bar H H, is attached. To this are attached the driving wheels C, hung in lever guages D. To this spring lever guage the brake is secured for arresting the progress of the car by releasing the pressure of the wheels upon P, the air tube. The driving wheels are so hung as to be pressed against the air tubes or thrown from them at pleasure by means of the brake K. When the cars are desired to be propelled, the driving wheel C, by pressing against the air tube resists the passage of the air and according to the pressure of the air so will there be a force proportional exerted to propel the cars. The principle and nature of the invention is the application to railroads and railroad cars the air pipe and driving wheel so adjusting them that when the air is forced into the pipe, it will impart to the wheel bearing upon it a rolling motion and thereby drive the cars attached to the driving wheels. The safety of the cars is certain as it regards immediate stoppage. There are guide wheels placed near the forward part of the car so as to run along a partition placed above or below the air pipe and in connection with the lever guage so as to press inwards against the pipe or outwards from it as may be desired for the greater or lesser pressure of the wheels against the air pipe, which is more fully explained in Fig. 2, page 284.

Immensity of the Earth.

About two thirds of the earth's surface is covered with a sheet of water, constituting the sea, the average depth of which is estimated at about two miles. This referred to our usual standards of comparison impresses us at once with an idea of the great amount of water investing the globe; and, accordingly imaginative writers continually refer to the ocean as an image of immensity. But, referred to the mass of the earth, which is its own proper standard of comparison, it presents a very different aspect. The distance from the centre to the surface of the earth is nearly four thousand miles. The depth of the ocean, does not, therefore, exceed one two-thousandth part of this extent and astronomers have justly stated, that were we to place a representation of the ocean on an ordinary artificial globe, it would scarcely exceed in thickness the film of varnish already placed there by the manufacturer.

Light.

A ray of light contains three principles, each of which produces a different effect—the illuminative, the heating, and the chemical principles. The chemical element of the ray is the one which produces changes in the leaves of plants, and also upon daguerreotype plates. It is absorbed in both cases. The images of leaves, therefore, cannot be impressed upon the plate of the Photographer, for the chemical ray being absorbed by the leaf, is not reflected upon the plate.

A ray of light which penetrates a piece of glass or a body of water in an oblique direction deviates from the straight line, whilst if it falls on a crystal of limestone, (calcareous spars,) it is split, and the parts deviate at unequal angles from the original direction.

Covering Corn.

At the South a shovel plough or scraper is used for covering the corn. The hills are made five feet apart, and a smart girl can drop as fast as two ploughs can cover, so that two mules and three hands can plant from 12 to 20 acres in a day. One planter five miles below Augusta cultivates nearly 1000 acres in corn this season. It is no uncommon thing to see thirty ploughs running in one immense field.

Potatoes.

For three years potatoes planted at three different periods, viz. early in April, late in April, and in May, have shown the following results Every year the early potatoes have been sound and firm, the middle part unsound, and the late ruined.

RAIL ROAD NEWS.

Boston and Worcester Railroad.

The stockholders of this road have accepted the act of the Legisleture, authorizing the increase of the capital stock of the corporation: and to authorize the directors to create new stock, to such amount as they judge necessary for the purpose of the corporation. They have also given notice that subscriptions would be received for new stock to the amount of 700,000 dollars at par, from holders of stock, on the 17th inst., in the proportion of one share for every five shares so holden—such subscriptions to be made, and 50 per cent of the amount paid on or before the 1st of next month.

Railroad Extension

The Cheshire Railroad was opened from Troy N. H., to Keene, a distance of about nine miles last week. A number of stockholders and others from Boston, attended, and festivities of all kinds celebrated the event.

The Androscoggin and Kennebec Rail-Road.

This enterprise seems to be in the full tide of successful experiment. A short time ago, they wished to raise funds ($20,000) to buy their rails, in order to lay their road to Winthrop, and lo, in one week the funds were raised, and more than wanted, offered, but declined.

A Long Train.

A merchandize train of 113 cars came over the Northern Railroad, fifty of them loaded with splendid and valuable mast timber from the Shaker settlement at Enfield. Some of the masts were one hundred feet in length.

The Montreal Railroad was opened to the stockholders on the 10th inst. from Concord to Sanborton Bridge. This road is now completed 18 miles from Concord and about 90 from Boston.

The monthly returns of the Housatonic, Norwich and Worcester, Reading and Miami Railroads, show a falling off in business and receipts.

A Mr. Temple has recovered $3200 damages against the Fall River Railroad Co. for injuries received in a collision of trains on that road last year.

Pompeii a Railway Station.

The Rev. F. Hedge, of Bangor, Me., in a late letter from Naples, says that he arrived at the dug out city of Pompeii by a method never dreamed of by its former inhabitants, viz. a railway. Pompeii is now a regular railway station!

Artesian Well at Venice.

In an artesian well sunk at Venice, for the purpose of supplying the city with fresh water, four beds of turf were traversed, at the respective depths, of 97, 157, 279 and 412 feet. They show that at four different epochs the soil, which was gradually sinking, was covered to a slight depth by fresh water. Water was met with, at the depths of 16, 131 174, and 297 feet. This latter water which rises about 10 feet above the level of the lagunes, appears to have its origin in the marshy plains which surround them, an origin that appears to be confirmed by the carburetted and sulphuretted gasses which escape from the water, and the large quantity of azotized matter which it contains, not sufficient however, to render it unhealthy or unfit for use.

The Human Tide.

One hogshead of blood each hour passes through the human lungs to be purified by contact with air. To effect that purification, one hundred and two gallons of pure air are required for each hour. How important then are those essentials, free circulation and pure air. The young ought to exercise much the open air.

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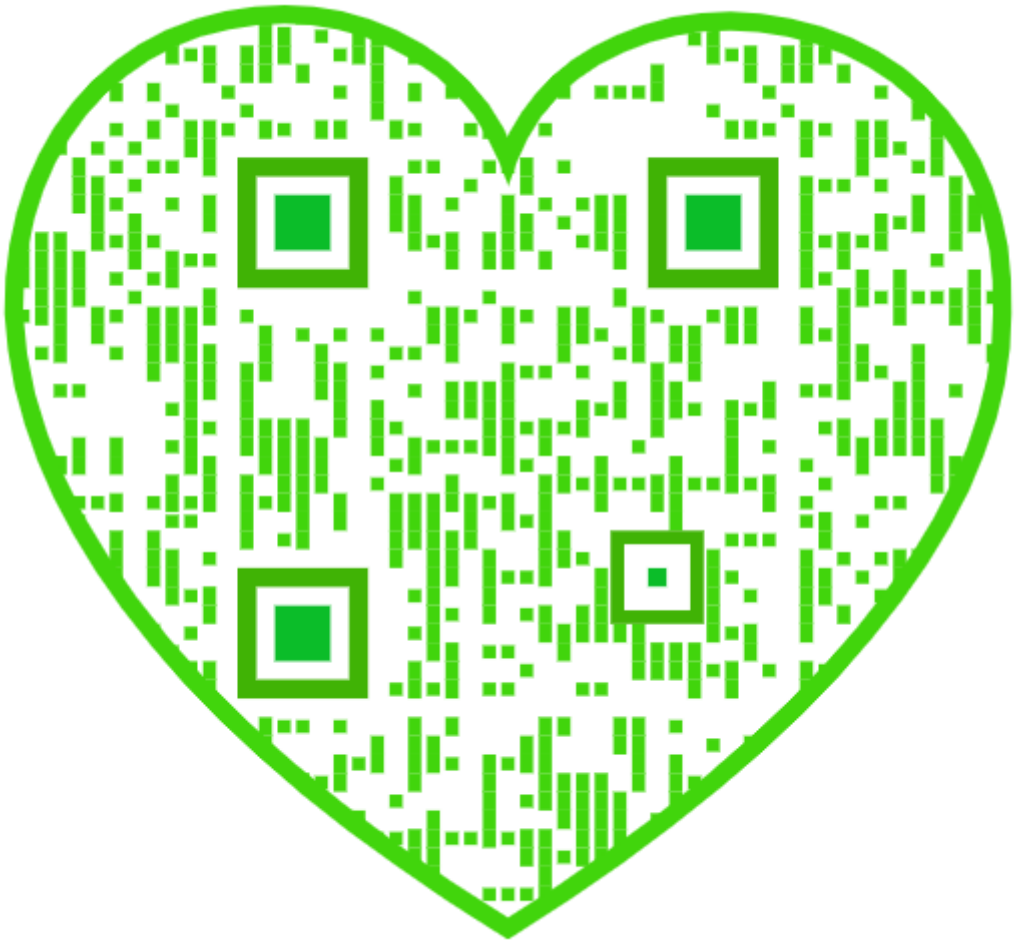

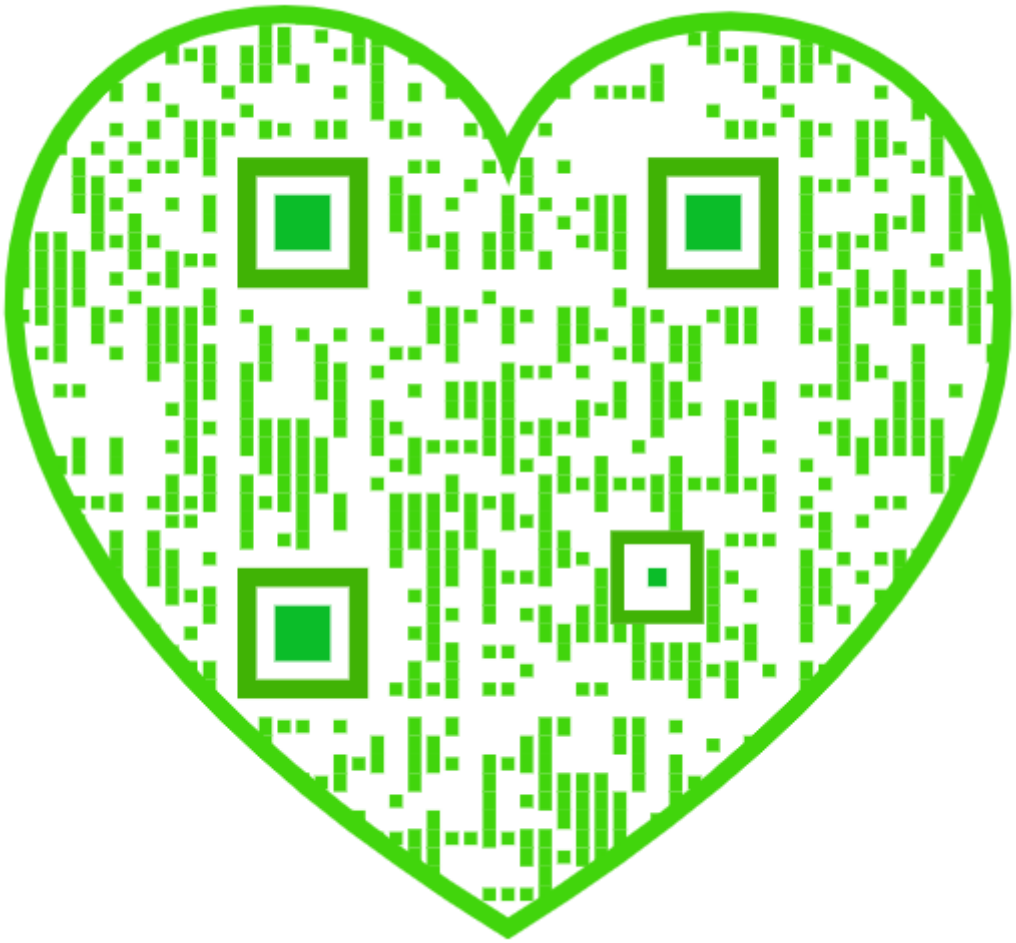

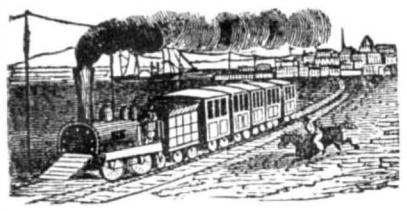

Late News.

The American steam ship Hermann arrived at this port last Monday from Liverpool, making the passage in about thirteen days. This is encouraging. The Franklin will beat this All Europe appears to be slumbering on the verge of a volcano. The armies of France, Austria, Germany, and Russia, stand looking at each other with fierce and hostile fronts, and we may expect soon to hear that war has commenced betwen France and Austria. England stands with folded arms, but ready with her keen political sagacity, to step in and pick up the bone about which the dogs of war have quarrelled. Ireland is divided against itself. Her war leaders use too strong language to enable them to "speak in deeds." It is a pity for that country. The Danes are fighting with Prussia and Hanover. England favors Denmark. An army of 350,000 Russians, are concentrated on the frontiers of Poland, ready to swallow up Prussia and all Germany at once. Some may remember the significant remark of the Emperor last year after a splendid review: "This is not mere theory. I will yet lead those troops to splendid conquest."

The government of France is now a Republic, root and branch, in the most democratic form. It is in the hands of the middle classes, and Lamartine is the ruling spirit. Some peasantry have proposed to burn Lord Brough ham's Chateau in Cannes. Abdel Kader is removed to the strong prison of Pau—thus showing that patriots and prisoners are one and the same thing in the eyes of a selfish government whatever its name may be. We will soon hear the news of bloodshed and scaffolds

Manufacturing in New Haven

The largest establishment in the Union for the manufacture of "Yankee Clocks" is located in New Haven. It is perfectly amusing to see the way they turn out time pieces, averaging more than thirty thousand a year. half of which are sent to Europe. They are neatly finished with mahogany cases, the interior is of brass and the average cost not beyond $3. An infinite variety of small wares are also manufactured there, aside from the extensive commerce which is carried on with the West Indies. Vessels are constantly leaving that port with horses and mules for the Islands, where they are used upon the sugar plantations. These animals are brought from every part of the Northern and Middle States, and many come from Kentucky.

Sarcasm.

Counsellor Lamb, an old man, when the great Lord Erskine was in the height of his reputation, was a man of timid manners, and nervous disposition, and usually prefaced his pleadings with an apology to that effect, and on one occasion, when opposed in some cause to Erskine, he happened to remark that he felt himself growing more and more timid, as he grew older. "No wonder," replid the witty but relentless barrister, "every one knows that the older a *lamb* grows, the more *sheepish* he becomes.

Factories.

At Salem, Mass., a mammoth steam mill is going up, to run 40,000 spindles. At Manchester, New Hampshire, two or three mills, of the largest class are being erected. At Nashua, a large mill is also building. At Lowel the Merrimac Manufacturing Company have put up a mill 400 feet long, running 20,000 spindles, and the Hamilton Company are also about building a large mill 300 feet in length, to run 15,000 spindles.

Mr. J. R. Hind, the celebrated astronomer, announces the discovery of a new star, of the fifth magnitude, and therefore visible to the naked eye, which has just made its appearance in the constellation of Ophiuchi. This new visible star is in a line joining Eta and Zeta Ophiuchi, rather nearer to the latter.

Freak of Lightning.

A singular accident with lightning lately happened at the New Hartford Manufacturing Company, Oneida Co., N. Y. The fluid passed down the rod which ran along the angle between the main building and a brick tower in front of it and adjoining, till it came to a joint. There it left the rod and perforated a brick wall, leaving a clean opening three or four inches in diameter, thence passed through the stone wall into the interior of the building. In the upper room it knocked out a block which supported one end of a spinning machine, and broke a hole through the floor by which it descended into the room below, leaving no further marks above. Here it passed along the course of two carding machines stripping them of everything combustible, then made a leap of the length of the room to a third machine, which it treated in a similar manner, and then eloped without further notice. The rooms were filled with a dense smoke, and as the accident happened in the day time the fire was extinguished after some little trouble. The damage is estimated at about two hundred dollars

The astonishing fact that the fluid passed through a neighborhood so inflammable as the rooms of a cotton factory without producing instant and general combustion, is to be accounted for by the circumstance of its having happened on Sunday, as the last duty on Saturday was to clean the machines and rooms of all loose cotton.

Influence of Cleanliness.

A neat, clean, fresh aired, sweet, cheerful well arranged, and well-situated house, exercises a moral as well as physical influence over its inmates, and makes the members of a family peaceable and considerate of the feelings and happiness of each other, the connection is obvious between the state of mind thus produced, and habits of respect for others and for those higher duties and obligations which no law can enforce. On the contrary, a filthy, squalid, noxious dwelling, rendered still more wretched by its noisome site, and in which none of decencies of life can be observed, contributes to make its unfortunate inhabitants selfish, sensual and regardless of the feelings of each other; the constant indulgence of such passions render them reckless and brutal; and the transition is natural to propensities and habits incompatible with a respect for the property of others or for the laws.

Miscellaneous Tree.

A gentleman of Golnitz, in Altenburgh, carried the art of engrafting various kinds of fruit into a native tree so far that it contained 300 samples. This, we believe, has never been surpassed. It was a work of love with him. He appended a piece of board to each engraftment which gave the tree an appearance the most amusing. The Russians who once bivouacked in the vicinity, refrained from harming it, although they cut down all its companions for fire-wood.

Increase of Memphis.

Memphis, Tennessee, has a population of 10 or 12,000 souls. Ten years ago, it had not more than 2,000 souls; its trade and business have increased as rapidly as its population. It has a commerce of upwards of $5,000,000 per annum. It exports this year some 140,000 bales of cotton: ten years ago it did not ship over 20,000 bales.

Manufacture of Silk in the Eastern and Southern States.

Great progress is making in the western States, in the culture and weaving of silk, which we hope to see soon becoming an extensive article of American manufacture. In Ohio and Pennsylvania, they are producing silk of an excellent quality; and at Louisville Ky., there is a manufactory in operation. Most of the manufactories, both in the eastern and western States are carried on by steam. The cocoons are reeled on the machine universally known as the piedmontese reel; and the silk is spun upon a throstle machine, a modification of which makes the twisted silk.

The first fine needles made in England, were by a negro in Cheapside who kept the art a secret.

Conway Tubular Bridge.

This great structure which was noticed some time ago in the Scientific American was lowered to its permanent bed on the 24th of last month, and on the next day the first train passed through it, consisting of an engine and tender, and one carriage crowded with people anxious to pass first through the the iron tunnel. Mr. Robert Stephenson in person, with his assistant, Mr. Edwin Clark were on the engine, with several gentlemen. Although an accurate infringement provided for the purpose was used, not the slightest vibration or deflection could be perceived; the train passing and repassing several times amid the cheers of the spectators assembled on the occasion. A train of ballast wagons 106 tons weight was run through, and although the wind blew a hurricane outside, no symptoms of any motion could be registered within. Thus a new era in bridge building has commenced, and a few experiments will be final in regard to the true issue of tubular bridges.

Distressing Occurrence.

A most distressing occurrence took place in Hadnots, Carteret county, N. C. on Sunday 23 ult. A Mr. Wilson Chance, having previously discovered a bee tree, took his son Henry, and three half brothers, Stanly and Isaiah, and James Mabley, to cut down for the purpose of hiving the bees. While taking out the honey, Isaiah, James, and Henry ate of it. On the way home, his son Henry became blind and sick. Isaiah was taken in a similar manner, and in his blindness wandered out of the path. James having eaten a small piece of the bread, as it is called, on his way homeward, was discovered to be blind and helpless. He expired in half an hour after having eaten the last piece of bee bread. Search was then made for Isaiah, whom a neighbor had found and was met carrying him home blind and helpless. By the frequent use of salt and water, Isaiah and Henry recovered the next day, but not until their lives had been despired of. This should serve as a warning to all persons to be careful in eating honey taken from bee-trees.

This is a singular circumstance and worthy of scientific investigation.

A Ghost Laid.

The wonderful knocking at Haydesville, Wayne county, New York, about which a book has been written, is at length explained. One or two skeptical individuals who visited the house of Fox, where the marvel was, observed that whenever the "knocking" was audible some one, generally Fox himself, was sitting on the edge of the bed. It was also remarked that he moved his body in a wriggling manner, though very slightly. He was requested to leave the room and did so. One of the doubters took his place on the bed and by a slight movement of the body was able to produce the same knocking. The bed was then removed to another spot where it had a more steady footing. The astounding consequence was, that the knocking ceased, the Ghost was laid, and a vast quantity of faith and credulity exploded into moonshine.

Rice Crop.

The Georgetown Observer says, "the weather is seasonable, and our agriculturists are using it as well as they can. The inland planters, whose trunks have rotted away, and who are still endeavoring to keep up this ancient practice in the culture of rice, are trying to mend up and sprout their seed, and rely on rains to nurture the plant. After a long and dry season they have but a small hope of water enough. The tideway planters have nearly all put down their seed, and the weather is seasonable."

The following is a good idea, whoever may be the author of it.

If every pain and care we feel
Could burn upon our brow,
How many hearts would move to heal,
That strive to crush us now.

In cold climates the activity of vegetable growth is suspended during winter; but in the hot or tropical regions the same thing takes place in summer.

Among the articles now sent to England from this country, we notice legs of mutton in casks, in a slightly salted and preserved state, to be manufactured there into mutton hams. If only salted they are admitted duty free, but if they have undergone the process of drying or smoking they are subject to a heavy duty.

Mr. J. D. Reid, of Philadelphia, has invented an exhauster to carry off the electricity when lightning strikes the wires. The recent bursting of the magnet at Concord, and the constant danger to which telegraphic operators are subjected by lightning striking the wires, makes this an important invention.

A number of paintings of the old masters hastily rescued from popular violence in the late tumults, have found their way from Europe to St. John's, Newfoundland, and been sold for a trifle in comparison to their value.

Just as our paper was going to press we received another communication from Mr. E. Robbins of Syracuse, an honest and industrious last maker, who is another victim to the Blanchard Patent.

The whole face of the country from Croydon to Evansville, Indiana, says one of our exchanges, a distance of two hundred miles, is covered with pigeons destroying every species of grain put in the ground by the farmer.

Six years ago potatoes were selling at 25 cents per bushel, and it took six bushels at that price to pay for a bushel of corn. Now a bushel of corn will not pay for a bushel of potatoes.

The town of Springfield, Mass. is to be lighted with gas; and a sufficient amount of the capital stock of the Brooklyn, N. Y. Gas Light Co. has been taken up to warrant them in commencing operations to light that city.

A bill has passed the U. S. Senate permitting Spanish steamers to land passengers and mails in our ports without paying tonnage duties.

The recent discovery of valuable gold mines in Randolph and other counties in North Carolina, has set the whole population to examing rocks and speculating in mining lots.

Large quantities of emery have been discovered in South Australia, and at Ready Creek the supply is so abundant that miners are raising it to 5s. a ton.

The Mormons at Salt Lake, are said to be getting along very well. They have erected two saw mills and a grist mill, and have promising crops.

Some ladies of Venice have petitioned the Government to form a battalion of women, who will tend the sick, make cartridges, and help to fight!

A new steam saw mill of extraordinary dimensions is in the course of erection at Savannah, Ga. It is to be driven by three steam engines of 30 horse power each.

An Irish washerwoman at Hartford, Conn., receved a letter one day last week informing her that she had fallen heir to a large fortune.

An extensive manufactory of cedar buckets from the native cedar, has been commenced at Lebanon, Alabama.

The Halifax editors are crowing over a bunch of petrified eels, found somewhere in that neighborhood.

The quantity of coal annually used in London for the manufacture of gas, is stated to amount to 125,000 tons.

Louisville, Ky., has been visited by a cloud of gnats, which covered the whole surface of houses and ground.

The telegraph line between St. Louis and Chicago is rapidly progressing.

Watches were invented in Germany, and the invention carried to England in 1580.

The machine for spinning glass was invented in England.

The first pins were made in England in Queen Elizabeth's reign.

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For the Scientific American.

Argument for and against the use of Lickerins upon Cotton Cards.

Having noticed in some of your last numbers some articles by W. Montgomery, in relation to Cotton Factories, which were quite interesting to some of our manufacturers down this way—for the gentleman has written very sensibly upon the subject—has induced me to send you this paper upon a mooted question, in the hope that Mr. M. or some others of your correspondents will give their views upon the subject. If Mr. M. should notice the thing will he—if in possession of the facts—tell us whether Lickerins are used for *single carding* in England or Scotland.

Manufacturers in this country have been divided in opinion with regard to the utility of the Lickerin; some stoutly contend that they are of no sort of advantage whatever; and others admit perhaps a single point, viz. that they protect the main cylinder. There are various mills running, some with, and some without the Lickerin. A large mill at Salmon Falls, N. H. with 100 Cards *without* the Lickerin—also the Prescott Mill at Lowell, Mass., with 144 Cards. In this city the Amoskeag Manufacturing Co are running 120 cards, single carding—and the Lickerin is used. The Amoskeag Co.'s goods speak for themselves all over the country. Let us endeavor to look into this subject in the strong light of *common sense*—the best kind of sense in these matters. In order that we may arrive at a just appreciation of the argument it may be well to look into the nature of the working ot the carding machine. The object of running cotton through the card, is to separate the short fibres (waste) from the long ones, to lay them side by side and as free from dirt as possible. That is the whole it.

Those who condemn the Lickerin say "the fibres are laid straiter when the cotton is carried immediately from the feeding rollers to the cylinder, its periphery speed being so much greater than that of the Lickerin it therefore teasels the cotton from the rolls better; but, when the Lickerin is used, the cotton in being transferred from it to the cylinder, some how or other gets shockingly turned topsy-turvy and is less perfect than without the Lickerin." Part of this argument may be true particularly so in factories where the Lickerin is driven at too great speed—which is the case in many places. A cylinder 36 3-4 inches diameter, 115.45 inches in circumference, or 9.62 feet, driven at 112 turns per minute, gives a periphery velocity of 17.95 feet per second. A Lickerin driven (as it is in many mills) 4 turns to one of the cylinder, 7 1-2 in diameter, 23.55 inches circumference, has a periphery velocity of 14.65 feet per second. Here we have but about 3 feet per second difference in the two cylinders. No wonder then with such adjustment of the speed, it the machine should work better with no Lickerin at all. A still worse state of things would be obtained if there were less difference between the speed of these two cylinders; the web as it comes from the doffer would look still more imperfect and cloudy, the fibres every way but straight. The jumble would be complete if both cylinders were driven the same speed. A better adjustment of the speed would be to drive the Lickerin 2.40 to one of the cylinder. Perhaps it will be said this is too slow for Lickerins. Let us look into this. Feed rolls for cards—in this country—are generally 1 3-8 inch diameter—supposing they make 3 revolutions per minute, about 3-16 inch of the length of the lap is carried through per second: thus it appears more than 8 feet of Lickerin surface is appropriated to teasel off 3-16 inch of the lap, with only 268 revolutions of the Lickerin.—If cylinders are *well balanced* they can be driven faster, say 120 or 130 and the Lickerin in proportion. But the objector may still urge that the Lickerin does not strike the cotton with sufficient violence to throw the seeds and dirt *drawn* out of the work. Very well, but we run the risk of throwing off good staple also. This is the last thing, however, that ought to be said by the stickler for "no lickers" when he is quite willing to have *all* the dirt carried *up* into the work, and *none* carried *below* by a Lickerin. It is deemed by logicians a specimen of unfair reasoning when—merely for effect—one arrays against a position an idea in which he does not believe himself. Another point of advantage in using the Lickerin is, that the cylinder does not fill so heavy with waste. Practical carders must have noticed that the *Finisher* cylinders—without Lickers—are loaded with waste much more than the *Breakers*. The cause is obvious. The periphery velocity of the cylinder being so great, the fibres are snatched from the rolls with such violence, that they are thrust down into the very roots of the teeth. Now then of course the cylinder would fill up very soon with clean cotton, matted in like felt-work and can actually be torn off in flakes. Of course it is not desirable to have the card fill up so, and with long staple and matted in so hard that no power can lift those fibres and bring them in contact with the top sheets or doffing cylinder. The very reverse of this state of things is true when a Lickerin is used. Here the fibres lie more upon the points of the teeth so by the circulation of the air between the sheets, and by the centrifugal force the fibres are readily brought into contact with the top-cards and so the process of carding goes on.

Let us recapitulate the favorable points.

1. The Lickerin protects the main cylinder from injury and preserves the keen edge longer; a thing very desirable in good carding.

2 Less waste is made for obvious reasons above stated.

3. Throws off considerable dirt that would otherwise go into the work.

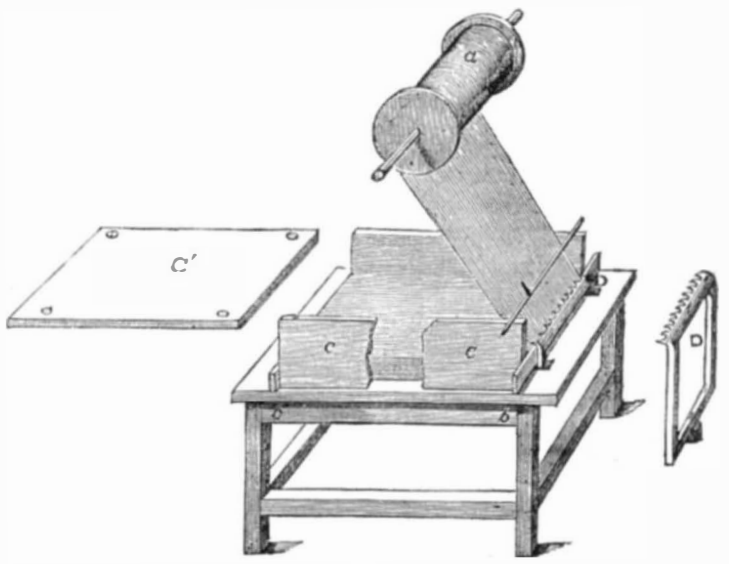
There is but one possible argument against the Lickerin, that is a supposition that the staple is laid straighter without it. But even this is not a fact when the Lickerin is driven at a proper velocity.

There can be no question but—if the above reasoning be correct—it would be an object, *as a matter of actual economy*, to use Lickerins on Finishers, for double carding.

Yours, &c. E. B M.

Manchester, Conn. May 15, 1848.

RUG WEAVING.



This engraving shows another mode from that described in No. 34, of obtaining a body of threads or yarns into a box in order to allow of a succession of slices or surfaces being cut off to form nap fabrics. It consists in what may be called a folding machine, whereby a warp either of one color or intermixed colors, according to the will of the party, and depending on the description of napped fabrics it is designed to produce.

a, is a warp roller on to which the threads are beamed. *b b*, is a table, and C, part of a box or case in which it is desired to pack a quantity of threads or yarns, and C, to the left, is the cover of the case. The warp is made fast to a rod which is at one end of the case C C, and is then drawn evenly to the opposite end of a case and a rod is then laid across the top of the warp. The warp is then taken back to the other end of the case C C, and another rod laid on till the warp is folded and the case is full, the rods being of such length as to protrude beyond the end of the case, and in order to pack the whole closely the rods are pressed down by a weighted instrument D. When a number of layers of the warp have been folded the lower rods may be successively removed to allow the layers to pack more close together, and by this means a body of threads will be packed in a box from which may be cut a succession of slices, each slice forming a napped fabric.

When an extensive surface is required to be napped, the cases may be made of such forms as will when combined together produce such shapes as required and place the patterns, or parts of the pattern, in the proper place, which arrangement will allow of tha patterns or ornamental designs (which require the most time in packing) being worked into separate boxes or cases, and the threads or yarns which are to form the ground may be in separate boxes or cases C.

Whatever may be the course pursued in obtaining bodies of yarns or threads in boxes or cases, as above explained, the fibres at the end of which may protrude, should be carefully shaved or cut off evenly, and India rubber or other suitable cement, is to be laid on to the surface of the fibres, and permitted to dry sufficiently before the ram or piston is caused to force a quantity equal to the length of the desired nap from the case C. When sufficiently dry, and on examination the cement appears to be complete over the whole surface, the piston or ram is to force out of the case or box C, a length equal to the length of the nap; when that quantity is to be cut off with a sharp knife, or other suitable instrument and the ends of the yarn which is in the case or box, are to be again coated with cement, and so on till the whole is cut up into slices, which may be afterwards applied by cement to other canvass surfaces of any shape or form desired.—Gilroy.

Talent always worth a Price.

No men are more justly entitled to fair prices, than truly qualified and competent teachers. And this, not barely because of the value they give in retnrn, but because of the great outlay of time and money necessary to prepare for their profession. Some teachers have spent a dozen years in their preparation, and have laid out many thousand dollars, a capital of time and money sufficient to have made them rich, in merchandize, or at any mechanical art. Few persons can estimate the value of things, where results are produced with ease, and in a moment. They must see the labor performed. Most can readily believe that a railroad, a canal, or a ship, is worth all the money asked for it, but they cannot understand why a painting or a statue, should be held at many thousand dollars. Nor can they be amazed that Paganini should expect twenty guineas for a single tune on the violin? A plain, but frank-hearted and sensible farmer, once called at the office of a celebrated chief justice in the South, and asked him a very important question, that could be answered in an instant, categorically—yes or no "No," was promptly returned. The farmer was well satisfied. The decision was worth to him many thousand dollars. And now the client about to retire, asked the farmer the charge for the information. "Ten dollars," replied he. "Ten dollars!" ejaculated the astonished farmer, "ten dollars, for saying no!" Do you see these rows of books, my friend? rejoined the Chief Justice; "I have spent many years in reading them, and studying their contents, to answer "No." "Right! Right!" responded the honest farmer, "right! I cheerfully pay the ten dollars."

Tricks upon Birds.

There is a singular bird they call "The Adjutant," in India. He performs the duty of a scavenger, devouring offal and punishing the whole family ot snakes. He is a huge, grave, long-beaked fellow, with an air rather Dominie Sampsonish than military. Some of the English soldiers used to play sad tricks with him. He would gobble up large bones of beef, or a four-pound loaf; and when he had finished his huge meal, he would mount the highest pinnacle he could find, and stand on one leg like a mutilated statue, while it digested. The soldiers used to cleanse out shank bones of mutton, stuff them with gunpowder connected with a slow match, then throw them to the Adjutant, who swallowed them greedily; but while chuckling over his savory morsel, it would explode and blow him to atoms! Another trick upon the birds was to tie two legs of mutton together by a strong cord, leaving an interval of three or four yards and then toss the rich repast among them, which soon found their way into the stomachs of two of the most active. As long as they kept together it was all very well; but as soon as the cord tightened both became alarmed and took wing, mutually astonished at the phenomena, no doubt. A laughable tugging match then ensued in the air, each Adjutant striving to mount higher than the other, till at last they attained a great elevation. When at length the weaker bird was forced to disgorge his mutton, a new power came into play—the force of gravity—and the pendulum leg of mutton, after some ridiculous oscillations, brought the conqueror down to the earth a great deal faster than he wished.

Sting of a Bee.

The ingenious experiments of the celebrated Fostana, demonstrated exclusively, that the venom of the bee is strictly analagous in its nature and mode of operation, to that of the viper. The matter is a thin, diaphenous fluid, retained in vessicles so constructed that they can admit of a ready compression in the act of stinging—during which the poison liquid is forced through the hollow tube of the sting in the same way that the irritating sap of the nettle is ejected through the oculet, or stinging spines of that and other similar plants. The most efficacious remedy I have ever found for the sting of a bee, is simple chalk. As soon as you are stung, apply as much of this substance as you can take upon your thumb nail, in a moist state, and permit it to remain as long as the pain subsides. After this application there will be no soreness, and no inflammation.

China Silk Market.

Mr. Walsh, in one of his letters to the National Intelligencer from France, states that in China the principal silk market is Sou Tchou, a city of the interior, the largest perhaps in the world; for Pekin has but four millions inhabitants, while, if we may credit Mr. Hedde, who visited it, Sou Tchou has a population of five millions within its walls, and ten millions within a radius of twelve miles around. Situated on the great imperial canal, it has ten thousand bridges. Since 1718, when the missionaries quitted it no individual, until Mr. Hedde succeeded, could get ingress. He did so, disguised completely as a Chinese trader.

Velocity of Water.

The velocity which liquids acquire when issuing from an orifice, whether sideways, upwards or downwards, is equal to that which they would have acquired in falling perpendicularly from the level of the fluid to that of the orifice. When a liquid flows from a reservoir which is not replenished, but the level of which continually descends, the velocity is uniformly accelerated; so that an unreplenished reservoir empties itself through a given aperture in twice the time which would have been required for the same quantity of water to have flowed through the same aperture, had the level been kept up to the same point.

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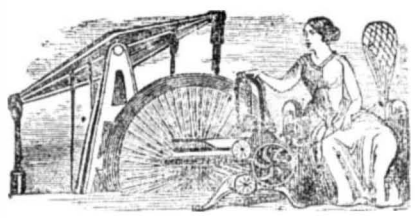


New Inventions.

New Steam Vacuum Guage.

Mr. Paul Stillman, of this city has invented and secured a patent for a new and useful improvement in Steam Guages. He combines an elevated chamber with the lower end of the guage tube containing the mercury reservoir, and having the reservoir of such capacity in combination with the partial exhaustion of the tube of the steam guage at the time of charging the instrument as that the tension of the air above the mercury of the tube, when a partial vacuum is produced in the boiler, shall not be sufficient to force all the mercury out of the tube, so that a quantity of oil in the tube shall always be the same. The lower edge of the glass tube is surrounded with a metallic gland provided with a cap at the bottom through which the mercury can pass slowly to establish the connection with the reservoir. The entire surface of the gland is tinned that the mercury may adhere thereto, sufficiently to prevent the passage of moisture from the surface of the mercury in the reservoir, between the mercury and metallic gland spoken of. Mr. Stillman introduces naptha upon the surface of the mercury to prevent the mercury from oxidising and soiling the glass tube of the steam guage—a very important and ingenious means indeed, to accomplish this object. The whole invention exhibits much ingenuity as well as scientific and practical knowledge of the nature of steam, the atmosphere and the metals.

New Button Mould Machine.

Mr. Rufus Hyde, of Chesterfield, Mass., has sent us a drawing of a machine for making button moulds. It is very superior to those in common use inasmuch as one girl can attend a number of machines. The machine itself feeds in the bone strips, something that has heretofore been done by hand. Two notched wheels feeds the strips, one acting on the feeder, and the other by an arrangement of a lever, spring and cam shaft, keeps the feed roller always pressed up against the edge of the strip, and shifts it so as to form the mould between the rollers used for that purpose.

Revolving apparatus for Clearing Railway Tracks.

Drawings of a revolving apparatus for removing obstructions on Railroads have been sent to the American Railroad Journal, by Mr Samuel Streeter of Detroit, Mich. The invention is described by the Journal as follows :—

There are several different machines—first, for removing cattle, logs or persons. This is to be done by the revolutions of a double conical cylinder, in front of the engine, with angular flanges, or wings from the centre, and largest diameter at each end. The revolutions are upward and forward, which tends to lift the obstruction, while the cone and wings tend to throw it off on one side, beyond the rail.

This apparatus is said, by the inventor, to answer for a snow plough as well as cow remover: but there is also another, and distinct apparatus for that purpose, and there is still another for cutting ice, and brushing it from the rails,

A Curiosity.

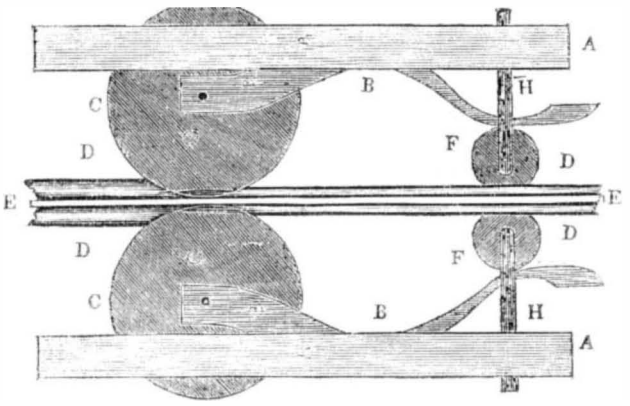
A model of an electric frigate, of forty-four guns, full rigged, with guns, men, life-boat, &c., has been exhibited in Buffalo. The model was built by Mr. E. Hurst, of Canada—the motive power and apparatus by Dr. Albert Henderson of Buffalo. Electricity is the propelling agent, and her guns are fired, her bells rung, and all the various operations on board carried on by the very same instrumentality.

A New Telegraph.

A Mr. Bakewell, of London, England, has invented what is called a copying telegraph whereby words traced from the original are copied on paper by an instrument that has no connection with the transmitted message as applied, excepting by the usual wires from the voltaic battery. The letters traced upon the paper are of a pale color, on a dark ground formed by numerous lines drawn close together. The communications thus traced may be transmitted at the rate of 500 letters of the alphabet per minute of ordinary writing; and were short-hand symbols employed, the rapidity of transmission would be quadrupled.—When this means of correspondence is in operation, instead of dropping a letter into the Post Office and waiting days for an answer, we may apply it directly to the Copying Telegraph, have it copied at the distant town in a minute or less, and receive a reply in our correspondent's handwriting almost as soon as the ink is dry with which it was penned. There are various means, too, for preserving the secresy of cosrespondence; the writing may be rendered nearly invisible in all parts but the direction, until its delivery to the person for whom it is designed. The operations of the Copying Telegraph are not limited to the tracing of written characters. Letter press printing may be copied with even greater rapidity than writing, and fac-simile copies of papers may thus be transmitted to distant places long before the papers themselves are delivered to their readers.

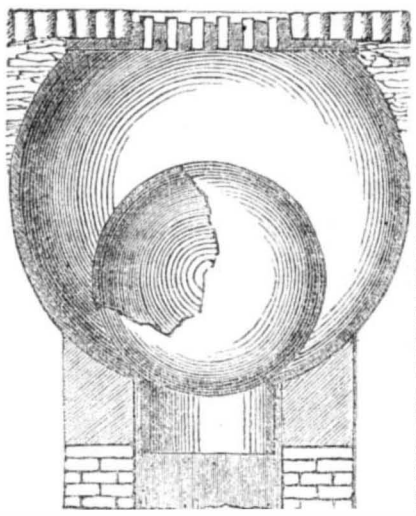
We can easily conceive that this is partly a chemical telegraph and has some relation to Mr. Bain's.

AVERY'S ATMOSPHERIC RAILWAY.---Figure 2.



This is a section view and exhibits the connection of the cars with the motive parts and the combination of the driving and guide wheels with the air tube. A A, are runners of the cars to which all the rest are attached. B B, are the spring lever guages on which the driving wheels are hung and in combination with these are F F, the guide wheels, hung on crossbars H H. E, is the central rail, to which the air tubes D D, are attached, and when the pipes are inflated with air behind the driving wheels motion is communicated to the cars. The same principle can be carried into effect by hydraulic pressure and knowing the noncompressible nature of water, it has been suggested by some to employ water for this invention instead of air. The same principle applied to pneumatic pressure as invented by Mr. Avery for railway propulsion, can thus be applied by water to effect the same object. We should like to see this invention experimented on by some company competent to do so. In England this has been done by another method, and this we believe is the first American Pneumatic Railroad patent. It was granted in the month of September last.

Hydrostatic Valve



This is an invention of extreme simplicity, and is an application of the obvious hydrostatic law, that a body superficially lighter than water must float therein. The valve represented above, is intended for preventing the emission of noxious vapors from sewers of all kinds and dimensions. A spherical recipient is placed between the mouth of the drain and the grating above; and a valve, spherical also, hollow and very light, which resting on the said recipient naturally eloses the inferior hole of it, that is to say shuts the entrence to the sewer. It is evident that the mouth of the sewer will be constantly shut by the said valve; but when water comes into the recipient, the valve will float; and thus the mouth of the drain being open, the water discharges itself freely through it, till at length the valve will replace itself upon the orifice, which will then be again closed; a very small groove in the circular border of the said orifice, will give flow to the small quantity of water, which, being less heavy than the valve, would after its shutting, remain in the recipient. The extreme lightness of the valve and the opening of it upwards are circumstances which wholly prevent the bursting of the drains from the gas commonly produced, and occasionally lighted in them.

The recipient as well as the valve may be constructed of different materials, and very cheap. For the first, cast iron, baked clay, or cement should be very proper. The second may be made with sheet iron, or copper, or wood, (covered with a good varnish repellant of water,) or with india-rubber inflated.

Improvement In Cleaning Cotton and Wool.

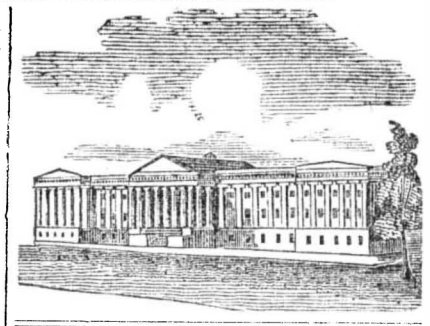
Mr. Addison Walpole, of Addison, Mass. has invented an improvement in Beating Cylinders which appears to be valuable. He substitutes wire cloth set in an elastic substance, such as vulcanized india rubber, or prepared gutta percha, in place of the teeth.

Shingling Machine.

Mr. Daniel G Marden, of Swanwille, Me., one day last week, sawed 13 1-2 thousands of shingles in one machine. It was done on a wager of ten dollars—the wager being that he could not saw 10 M. in a day. Mr. Marden thinks that it will be hard to beat this. Zina Knowlton bunched them all in a day, and those who have worked in that line of business will understand what kind of a day's work it was.

Carpet Loom.

The Boston papers speak highly of a new carpet loom which is now in operation in the Dean cotton mill at Taunton. It is said to combine the perfection of simplicity and power, executing with astonishing rapidity the most complicated patterns of three ply carpeting with precision and finish.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending May 16, 1848.

To Sterling Brewer, of Robertson Co. Tenn. for improvement in machinery for Shaving Shingle. Patented May 16, 1848.

To Henry F. Briggs, of Poughkeepsie, N. Y., for improvement in Shoulder Braces. Patented May 16, 1848. Ante-dated November 16, 1847.

To William Atwell and Joseph C. Kent, of New Bedford, Mass. for improvement in Weather Strips for Doors. Patented May 16, 1848.

To Stephen Ballard, of Meigs Creek, Ohio, for improvement in Atmospheric Churns. Patented May 16, 1848.

To Charles F. Johnson, of Oswego, N Y., for improvement in Electric Telegraphs. Patented May 16, 1848.

To A. H Stevens, of Geneva, N. Y., for improvement in Corn Shellers. Patented May 16, 1848.

To Nathan Towson, of Washington, D C. for improvement in Bricks. Patented May 16, 1848.

To John Eppley, of York, Penn., for improvement in machines for bending Sheet Metal. Patented May 16, 1848.

To Erastus C. Matthewson, of Hartford, Conn., for improvement in Weather Strips for Doors. Patented May 16, 1848. Antedated November 16, 1847.

To Peter H. Watson, of Rockford, Illinois assignor to Nathaniel C. Wheeler, of Painsville, Ohio, for improvement in Churns. Patented May 16, 1848.

To Amos Bigelow, of Adrian, Michigan, for improvement in Grain Driers. Patented May 16, 1848.

To Alfred T. Serrell, of New York City, for improvement in machinery for making Mouldings. Patented May 16, 1848.

To John A and Alfred Jones, of Lexington, Ky., for improvement in machines for dipping Candles. Patented May 16, 1848.

To John Kinman, of Mifflinburg, Penn., for improvement in machinery for the dressing of Staves. Patented May 16, 1848.

To Benjamin Edwards, of Laceyville, Penn. for improvement in Corn Shellers. Patented May 16, 1848.

To William Wilson, of Northampton, Mass for improvement in Fixtures for closing Doors. Patented May 16, 1848.

To George Gardner, of York Springs, Penn. for improvement in machines for hulling Cloverseed. Patented May 16, 1848.

To Isaac Evans, of Lebanon, Ohio, for improvement in Clevises Patented May 16, 1848.

To Jesse Fitzgerald, of New York City, for improvement in fire-proof Safes. Patented May 16, 1848.

To Emery N. Moore, of Boston, Mass., for improvement in releasing Horses from Stables in cases of Fire. Patented May 16, 1848.

To William Ross and William E Rutter, of Providence, R. I., for improvement in Tenders for Locomotives. Patented May 16, 1848.

To Edward Spain, of Philadelphia, for improvement in Churns Patented May 16, 1848.

To Alfred Sabbaton, af Reading, Penn. for improvement in Brick Machines. Patented May 16, 1848.

To M. W. Baldwin and A. S. Lyman, of Philadelphia, Penn. for improvent in Horse Rakes. Patented May 16, 1848.

ADDITIONAL IMPROVEMENT.

To Israel J. Richardson, of New York City, for improvement in Portable Horse Powers. Patented Feb. 10, 1846 Improvement adde May 16, 1848.

DESIGNS.

To Ezra Ripley, assignor of A. Cox & Co. of Troy for Designs for Stove Plates (two patents) Patented May 16, 1848.

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NEW YORK, MAY 27, 1848.

Newspaper Chronicles.

Newspapers are the heralds of passing events, hence a file of a good newspaper is a complete and voluminous history. The writings of a Bancroft in comparison with the file of a newspaper which had been published regularly since our government was established, would be as a skeleton compared with the full and robust body in the prime of vigor. Few persons are aware of the importance of regularly filing a paper. The older a paper is, the more valuable it becomes.—We have seen fifty and sixty dollars offered for a volume of a newspaper that had been published for five. Since this is true of a common newspaper, it is certainly no less true of one devoted to Science and the Arts. Had there been a paper like the Scientific American, published just since the Patent Office was first established, how much litigation it would have prevented and money saved.—We have a letter now in our possession, sent us a few days since, by a gentleman, Mr. R. of Pennsylvania, who says that one of our late numbers has saved him one hundred and seventy dollars. It gave him information which he had been in search of in vain for a number of years. The Scientific American is a Chronicle of progressive Science. It notices all the important inventions and discoveries of the day and will be a record of science to future generations. Let our readers, therefore, be careful and file their numbers. No foolish and useless matter of imagination is contained in our pages, it is matter that will wear like a gem, more brilliant the oftener it passes through the hands of the reader. Some of our subscribers have told us that they would not part with our first volume for five times its original price, nor with the second, if it could not be replaced, for twenty times its original price. Lay up carefully your numbers readers—their value you will discover to be greater and greater the longer they are in your possession.

Rights of Inventors.

There are many mistaken views held by the public relative to the rights of Inventors.—One very common mistake is, the using of a patent improvement irrespective of the patent claim of the orginal invention. No improved machine can be used on the patent of improvement, while the principle of the machine is covered with an existing patent. The original inventor cannot use the improvement nor the improver the original invention.—Without the consent of the original inventor, a very important improvement, although covered with a patent, may be perfectly valueless to the improver. This is right There is not a machine in existence but what its defects are easily perceived after it is put in operation—the original invention is the diamond, the improvement is only the work of the lapidary. The idea that a simple improvement patented, guarantees the using of a patented machine with impunity, has been fatal to the rights of and true interests of many inventors, because it has led to using the and trouble and heartburnings. We all know what Whitney suffered in defending his right to an invention that has tripled the value of American cotton. More than Whitney have suffered by the same kind of injustice. We know an inventor who at this present moment is suffering from infringements of his rights, while not a few who have not brains enough to conceive a single part of his invention, are enjoying the fruits of it. Our laws are bound to protect the rights of all inventors, and we are glad to see that there is a prevailing spirit to do this. The Patent Law grants to the inventor the full and exclusive right to his invention, also to his heirs and assigns. No person has a right to use his invention without his consent. The right of an invention, however, must be clearly defined and it can not cover any more ground than the machine with the full claim can perform, but it will cover all that it can perform and in the certain way, but not in another way or manner. A contested infringement can only be settled by a fair and full trial and examination of witnesses. It is not to be supposed that a machine claimed for weaving cotton cloth, or a machine for turning irregular surfaces in a certain manner, can be used for other purposes merely to evade the patent. The former could not be used to weave wool and the latter could not be used to turn out lasts. The principle of the invention cannot be violated.

An inventor cannot claim any more than is covered in his invention. One patent invention to perform a certain piece of work in a certain manner, cannot prevent another man from performing the same kind of work in another manner. This is a point which when contested can only be settled by competent witnesses. Patents are not granted to encourage speculation, but to encourage science and art, promote the welfare of our country, and advance her interests. We know that inventors have exclusive rights to inventions for fourteen years, but we also know that long after some inventors have slumbered in their graves, others have been granted by special law the inventor's privileges, and have abused the favors bestowed upon them by the representatives of the people, by scourging the people with the very favors granted by them. Patentees and agents should never be tyrannical nor usurious to an honest, industrious man that wishes to pay a fair price for the using of an invention. This we are sorry to say is not the mode pursued by the agents of some patents. Those, however, who are not willing to pay a fair price should not be at liberty to use the invention. Patentees and their executors may use their inventions to monopolise the whole benefit of them for fourteen years, but no longer. In some cases, however, from wanton infringements, the privileges should be extended by law, but in no case can we defend the conduct of a selfish and usurious monopoly that holds the dagger of the law subservient to the interest of the almighty dollar, so as to prevent, especially our middle class of mechanics and manufacturers, from using an invention at a fair price. That there are such monopolies in these United States, free and independent, the letter of Mr. Gaylord (see page 286,) is abundant evidence, and so also is testimony which we have from Messrs. Collins and Mr. Gorslin of Cohoes, in Albany county, in relation to the use of Blanchard's machine. Give, we say, a fair chance to our middling class of mechanics. Let not patentees be tyrannical with them for they are men who are seeking to rise. Those who are wealthy and have already enough and to spare, we say to our inventors, "get as much from them as you can, but do not with them or any man be unjustly usurious." The case of Mr. Gaylord is one that will excite sympathy for him but none for his prosecutor. Mr. G. was unconscious of infringement and had just gone to the expense of $2000 in fitting up his steam mill, and now all at once, the madate comes, "pay me one fourth of all you earn or your machinery must lay idle and rust." We should like to see a generous spirit exhibited by the owners of valuable patent rights—such a spirit as that of Mr. Wesson, the rifle manufacturer at Hartford, Conn., who for a moderate compensation allows all to manufacture.

Scientific Papers.

The proprietors of the Scientific American have recently made arrangements for the publication of a series of very valuable articles giving accounts of the *Arts, Manufactures and Machinery of the United States*, at the present time. The series will embrace the elementary principles of Practical Mechanics and Engineering; utility of machinery and manufactures; advantages resulting from the use of machinery; principles of Mill work; form and construction of Mills with reference to the power; Steam power and its applications to Machinery, Navigation and Railroads; descriptions of all Mechanical processes and manufactures, chemical works, iron works, glass making, calico printing, works of public and domestic utility, mechanical processes in metals, &c. &c. The first of these articles will be found on another page of the present number and will be continued regularly. They are from the pen of one of the first Engineers and have been secured by us at a heavy expense. We trust subscribers will appreciate our efforts to interest them, by commending the paper to the attention of their friends and advising all to subscribe. The Scientific American has the reputation already of being the most valuable mechanical paper in this country, and it is our constant aim to improve it still more.

For the Scientific American,

The Patent Office.

Mr. Editor:—I observed in reply to a communication in your valuable paper signed "Inventor," you state that the Examiners in Patent Office have, during the past two months devoted *twelve* hours each day to the business of their desks. Designing to injure no one, but merely to subserve the cause of truth, I feel bound to correct the error into which you have fallen.

It is not true that the Examiners, during the last two months, have labored twelve hours each day. I suspect your error originated from the fact that the Commissioner tried the experiment of prolonged hours of labor, but failed even in getting so much work done, as was done in the usual hours.

I understand the facts to be these: Mr. Burke, observing a great increase of new applications and a less number of examinations, during the months of December, January and February, determined to try the experiment of increasing the hours of labor in his office.—All the Clerks, therefore, were required during the month of March to be at the Office at 9 o'clock in the morning, labor until 3 o'clock P. M., then take a recess until 6 o'clock, when they were to return and remain until 9 o'clock in the evening. He was present with them to show that he was ready and willing to share all their labors and privations. He continued this arrangement during the entire month of March, and found at the end that with all the increased hours of labor no more, if so much, work was done as under the old arrangement. And he was even importuned by honorable Senators, (whether or not on the complaints of the Examiners and Clerks is not known,) to discontinue the practice.—Finding that no more business was accomplished he did discontinue it.

These, I understand, are the facts, and their weight should rest where it ought to rest.—The unwillingness of the Examiners and Clerks to second the praiseworthy efforts of the Commissioner to advance the business of the Patent Office, will not, I am confident, be forgotten by Mr. Burke. And when the bill increasing the force and the *salaries of the Examiners*, shall pass, and the Office shall be fully organized under it, Mr. Burke is not the man who will forget to reward appropriately those who have so *nobly* seconded his efforts to do the public business.

The hours of labor in the Public Offices in Washington are regulated by law. From October 1st to April 1st, the Clerks are required to labor not less than six hours a day. From April 1st to October 1st, they are required to labor not less than seven. Of course the heads of the Public Offices may require more labor of their Clerks if the public interests require it. And the Examiners and Clerks in the Patent Office have never labored more than the hours absolutely required by law, except during the month of March as above mentioned. You and your readers can, therefore, judge whether they are entitled to the praise of doing so much extra labor as you give them credit for doing, and whether they are the proper persons to receive the greatly increased salaries provided for in the new bill.

As I want no imposition upon the public in this matter, I have made the above exposition of facts, which, I am confident, will be found to be substantially correct.

FIAT JUSTITIA.

The information which we previously received was from a source which we thought entitled to credit. It was not an intentional mistake. The above is prima facie evidence and can be confidently relied on.

The Bill for creating additional Examiners in the Patent Office passed the House of Representatives on Wednesday the 17th inst.—Mr. J. W. Farrally of Penn., chairman of the committee of conference reported the Bill to the House in its original shape, creating two Examiners at $2500 salary per annum, and two Assistants at $1500. The bill has therefore passed in the form advocated in the Scientific American. "The sober second thought of the House of Representatives was right." Inventors will be glad to learn that the bill has at last passed. As the business of the Patent Office increases at the rate of thirty per cent, it would be well to have either regular additions to the staff every year, or else to increase the hours of labor to eight per day.

Every Man a Farm.

On motion of Mr. Wentworth, of Illinois, the following resolution was recently adopted by the U. S. House of Representatives:—Resolved, That the committe on Public Lands inquire into the expediency of providing by law, that any landless citizen of the United States, or any other adult, landless person who will legally testify that he has taken the necessary steps to become a citizen, and intends to be so as soon as possible, may possess, by actual residence and cultivation, so long as he shall continue landless and destitute of the means of purchasing land, a certain quantity of the public lands now remaining unsold and unclaimed under any preemption laws of the United States, and thus secure every person a farm who is willing to dwell upon and cultivate it.

Illinois Iron.

An inexhaustible amount of Iron Ore has recently been discovered in Schuyler county within a mile of Illinois River. Samples of this ore were sent to Pittsburgh, and on trial found to yield a rich percentage A company from Pittsburgh has since visited the ground and in conjunction with citizens of the Schuyler, are making arrangements to erect a number of furnaces with a view of commencing operations at an early day Schuyler is one of the heaviest timber counties in the State, abounding also in coal mines, and all other necessary facilities for manufacturing.

Wire Fence.

This mode of fence is becoming quite common in the northern part of Illinois. We hear of many pieces of it at various places places near Rock River—one of them on the farm of John Shillaber, Esq., in Ogle county, being about two miles in length. The cost generally, as near as we can learn, is about 35 cts. to the rod. It is said to answer a most admirable purpose against all stock but swine. Cattle and horses particularly, after having their noses well sawed by it once, can scarcely be got near it again.

The Board of Education at Syracuse, in this State have refused to employ any man in that city who is in the habit of using tobacco in any form! Think of that ye chewers, smokers and snuffers.

Scientific American—Bound Volumes.

The second volume of the Scientific American, bound in a superb manner, containing 416 pages choice reading matter, a list of all the patents granted at the United States Patent Office during the year, and illustrated with over 300 beautiful descriptive engravings of new and improved machines, for sale at this office—Price $2,75. The volume may also be had in sheets, in suitable form for mailing—at $2.

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Arts, Manufactures and Machinery.

Mechanical Principles—Utility of Machinery and Manufactures.—The addition they make to human power—Relative power required to move a block of stone 1080 *lbs.*

There is perhaps, no single cirsumstance which distinguishes our country so remarkably from all others, as the vast extent to which we have carried our contrivances of Tools and Machines for forming all those conveniences of which so large a quantity is consumed by almost every class of the community. The amount of patient thought, of repeated experiment, happy exertion of genius, by which our manufactures have been created and carried to their present excellence, is scarcely to be imagined. If we look around the rooms we inhabit, or through those storerooms of every convenience, of every luxury that man can desire, which deck the crowded streets of our larger cities, we shall find in the history of each article, of every fabric, a series of failures which have gradually led the way to excellence; and we shall notice in the art of making even the most insignificant, processes calculated to excite our admiration by their simplicity, or to rivet our attention by their unlooked-for results.

The accumulation of skill and science that has been directed to diminish the difficulty of the production of manufactured goods, has not been beneficial to that country only in which it is concentrated; distant nations have participated in its advantages. The luxuriant natives of the East, and the ruder inhabitants of the African desert, are alike indebted to our looms. The produce of our factories seems to have preceded even our most enterprising travellers.

We propose to give a detailed account of the various Manufactures which are carried on in this country, and a description of the the tools and machinery by which their operations are conducted. Previously to this, however, we shall endeavor to state the principles on which their success depends, and to trace the consequences of the application of machinery to supersede the skill and power of the human arm.

The utility of Machinery and Manufactures seems to arise from the ***addition which they make to human power:—the economy of human time;—and the conversion of substances apparently the most common and most worthless, into very valuable products.***

With respect to the first of these effects, the forces derived from wind, from water, and from steam, present themselves to the mind of every one; these are, in fact, additions to human power, and will be considered in a future number: there are, however, other sources of its increase. by which the animal force of the individual is made to act with far greater than its unassisted powers, and to these we shall at present confine our observations.

The construction of Palaces, of Temples, and of Tombs, seems to have occupied the earliest attention of nations, just entering on the career of civilization; and the enormous blocks of stone moved from their native repositories to minister to the grandeur or piety of the builders, have remained to excite the astonishment of their posterity, even long after the purposes of many of these records, as well as the names of their founders have been forgotten.

The different degrees of force necessary to move these ponderous masses will have varied according to the mechanical knowledge of the people employed in their transport; and that the extent of power required for this purpose is widely different under such circumstances, will appear from the following experiment, which is related by M. Redelet, *Sur L'Art de batir.* A block of stone was taken for the subject of experiment, weighing 1080 lbs.

1. Weight of stone. 1080 lbs.

2. In order to drag this stone along the floor of the quarry roughly chiselled, it required a force equal to 758 lbs.

3. The stone dragged over a floor of planks required 652 lbs.

4. The same stone placed on a platform of wood and dragged over a floor of planks, required 606 lbs.

5. After soaping the two surfaces of wood which slid over each other it required 182 lbs.

6. The same stone was now placed upon rollers of three inches diameter, when it required to put it in motion along the floor of the quarry 34 lbs.

6. To drag it by these rollers over a wooden floor required 28 lbs.

7. When the stone was mounted, on a wooden platform, and the same rollers placed between that and a plank floor, it required 22 lbs.

From this experiment, it results, that the force necessary to move a stone along the smoothed surface of its quarry is nearly as two-thirds of its weight; to move it along a wooden floor, three fifths, by wood upon wood five-ninths; if the wooden surfaces are soaped, one-sixth; if rollers are used on the floor of the quarry, it requires one-thirty-second part of the weight; if they roll over wood, one-fortieth: and if they roll between wood one-fiftieth of its weight.

At each increase of knowledge, as well as on the contrivance of every new Tool, human labor becomes abridged. The man who contrived rollers, invented a tool by which his power was quintupled. The workman who first suggested the employment of soap or grease, was immediately enabled to move without exerting a greater effort more than three times the weight he could before. So sensible are the effects of grease in diminishing friction, that the drivers of sledges in Amsterdam, on which heavy goods are transported, carry in their hand a rope soaked in tallow, which they throw down from time to time before the sledge, in order that by passing over the rope it may become greased.

(*To be continued.*)

For the Scientific American.

Woodworth's Patent.

Geneva, May 19, 1848.

Mr. Editor:—I am wishing to obtain some reliable information respecting the validity of the claims which have been recently set up by the proprietors of the Woodworth Planing Machines Knowing your facilities for procuring such information has induced me to make the following inquiries, viz. Whether rotary cutters for moulding sash, &c. is an infringement on the Woodworth planing machine? Also whether Fay's Tenoning Machine is an infringement? These machines have been in use in this part of the country from fifteen to twenty years unmolested. Mr. Judd, of this village, purchased one of the tenoning machines, seventeen years ago to my knowledge, with the right of use, but all at once the proprietors of the Woodworth Patent have discovered that they are an infringment, and are forbidding the use of them, and all the rotary cutters, in general use for manufacturing wood work Now I would not infringe on any man's rights knowingly, and if these claims are valid it is important for the public to know it in order that people may understand all the impediments to embarking in an enterprise of the kind. If they are fictitious it is equally important that they may avoid being imposed upon.

When I entered into the business of manufacturing by machinery I had not the least suspicion that there would ever be any claims set up on machines that had been in use so long unmolested, neither do I believe that there is a shadow of foundation or justice in their claim. It seems to me great injustice has been done to the public by the extension of the Woodworth patent. Was it for the benefit of the heirs, or for an overgrown monopoly a portion of whom are now stretching forth their strong arm to crush all those honest and industrious mechanics who have innocently engaged in a laudable pursuit for a livelihood—for instance, requiring one fourth of all the earnings of a machine and adding such other restrictions as none but a slave would willingly submit to. I have been notified by Mr. Gibson that if I run my cutters for moulding and tenoning sash and blinds another minute he would commence a suit against me immediately. When proof is shown me that I am infringing on the Woodworth patent, I will submit and close up my business, but to the contrary I shall stand my ground as long as I have a cent left. If I have a correct idea of the Patent Law, any man has a right to take a portion of the principles of a patent machine and make a different application of them from those specified in said patent without infringing If it were otherwise inventors would soon come to a stand, for where do we find a new invention that does not combine something that has been in use before; for instance rotary and crank motion which have been in use from time immemorial. It would be a weakness in a man to argue that either of these principles in themselves constitute any portion of their claim to a patent as these are the fundamental principles from which all machinery is driven. But to one more point. Would the Woodworth patent machine for planing, tonguing and grooving boards and plank be valued if the testimony of Hale, Emmons and others were justly considered. I think not.

It is surprising to me that a monopoly of this kind after having fattened out of the public for fifteen or twenty years should be suffered to coil itself around our members of Congress so as to be permitted to fasten its huge paws on the community for many years to come, without a remonstrance against it.

I shall now drop this subject until occasion requires it to be alluded to again, when further facts may be brought to light that will not be relished by those who are fond of displaying their power and authority over the heads of the poor but innocent mechanics.

Yours respectfully, P. Gaylord.

[Mr. Gaylord will find our sentiments expressed in the article "Rights of Inventors," on another page.—Ed.

The Jacquard Machine.—Its Invenior.

At the recent soiree of the Bolton Mechanics' Institute, England, Dr. Bowring told the interesting story of Jacquard the inventor of the loom. He said, "I do not know, my friends, whether you have heard the name of Jacquard or the Jacquard loom, which introduced so great an improvement into the manufacture of silks. I saw the old man only a few days before his death. The city of Lyons in which he was born, and in which he had been terribly persecuted during his early life, felt that it was due to him to make his declining age happy, and they gave him a liberal pension, which enabled him to pass the evening of his life in tranquility and peace and to purchase a pretty villa, to which was attached a beautiful garden, where I had an opportunity of hearing from his lips the history of his own experience. Perhaps you will allow me to repeat to you a few remarks of that extraordinary man, made to me, seated with him in his own bower, fairly and truly under the shade of his own vine and his own fig tree, and on a beautiful summer evening when the sun was setting, and when the decline and setting of that sun reminded me that the sun of Jacquard was setting also, for he was weak, and about to be lost to his generation. Jacquard was a straw manufacturer in the city of Lyons, he was a poor man, and he had received little instruction.

During the war with England there was an article appeared in the French Moniteur, which stated that a person in England had offered a large sum of money to any person who could produce a machine by which a net could be made. This set him to work, and he did get over the great difficulty of producing a machine by which a knot could be tied. The thing was forgotten, and by some accident this net was given to the great Emperor Napoleon, and he was told that a poor man on the banks of the Rhone had solved a very great problem. Jacquard, in great poverty one day and scarcely knowing how to exist, was surprised by the visit of a sergeant of *gens d'arms*, who knocked at the door. He came down stairs, and the sergeant said, "I have orders to take you to Paris." He said, "Who has sent for me at Paris?" he was told "Why, you will hear that when you get there. There is a carriage waiting for you." He said, "I must send for my wife, and make preparation:" but the serjeant said, "No, you must go as you are;" and he was taken to the palace of the Tuileries, and introduced immediately to two persons no less distinguished than Napoleon Bonaparte and his great minister Carnot. Napoleon said, "They tell me you say that you can tie a knot in a straight string (for that is the art of knitting,) by a piece of machinery; I don't believe you." He continued, Now, in order to try you, I will have you locked up in an apartment and supplied with materials upon which to work, and everything you require to make your machine."

Well, Jacquard set to work, so locked up and constructed a machine, was covered with honor, continued to direct his attention to mechanical arts, and afterward produced that machine which bears his name, to which I have referred, and which improvement in the loom, by merely throwing the shuttle across the warp, produced the most beautiful patterns. These machines produced a revolution in France; twice they rose upon Jacquard, and twice they attempted to drown him in the Rhone. There was the same violence in this country. There was a crusade against knowledge and improvement, and nothing but the power of those who were his friends could have secured his life from danger, or his person from outrage. He withdrew himself from the world for many years still attempting to be the benefactor of his native land. Opinions changed, however, and, as I told you, before he died, he was the recipient of a liberal pension, not only from the city of Lyons but from the French government. He died upon the property which was conveyed to him, the grateful gift of the people he had honored and elevated and when he was carried to his tomb, the city of Lyons declared that his portrait should be painted and hung up in the School of Arts where I have seen it. This is an encouragement for all men not to be deterred from great undertakings by the rash and intolerant spirit of a moment; but to feel that the prejudices of time will pass away, and that he who does honor and service to his country, will be acknowledged as his country's benefactor."

Science and Religion.

Rising from different sources, Science and Religion are like two mighty rivers, seeming sometimes to run in opposite directions, but yet tending to empty their waters at the same point into the same ocean. Already are they seen to approach each other; words of friendly salutation are exchanged across the isthmus which yet divides them, and the pennons which gleam from the vessels of those who float on their surface, are found to contain mottoes of similar import. On the one side I see it written, Great and marvellous are thy works Lord God Almighty: and on the other, Just and true are thy ways, O thou King of Saints: and when these two currents shall unite, then shall there go up from the blended multitude, as the sound of many waters, the one undivided song of Moses and the Lamb.

George Canning.

George Canning never forgot the humble mother that bare him. So soon as his resources would permit, he made ample provison for her support; and for years after he entered Parliament, and even when a foreign ambassador, he wrote her a weekly epistle, breathing the kindliest affection. Though he could never elevate her tastes and associations above the connections of her youth. he used to throw aside the cares of office, that he might visit her, and the humble cousins with whom she dwelt, at Bath, and there when in the zenith of his fame, would walk out, with his plebeian relatives, and receive the homage of his lordly visitants at that fashionable resort, in their company. This marks him a noble man. He delighted in literary pursuits—would drop the pen when preparing a diplomatic despatch, to talk over the classics with his university acquaintances—was a brilliant essayist and wrote Latin and English verses with much grace and beauty.

Those that are of high birth are respected; their very name is a sort of panegyric to them and this is one of the greatest privileges a man can desire But give us the man who has raised himself to fame—the root and not the branch of greatness.

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TO CORRESPONDENTS.

"D. E. of Mass."—We cannot see any advantage to be gained by the two wheels, but a loss by the friction of the chain. The power is all in the water, and it can all be applied to one breast wheel as well as to two by your plan. Give the subject a little more consideration and we have no doubt but you will agree with our opinion. Your manure spreader is a good apparatus and a very useful one and you should take measures to get a patent.

"E. G. of N. Y."—Your leather splitting machine is good and we do not think there is anything in the way of your getting a patent but it is scarcely possible to get any person to engage in purchase before a patent is secured. The reason of this is, that a number of people have recently sold inventions that were not new, and which have been all lost to them.

"S. M. of Ohio."—As we predicted to you, it would have been better to have paid a decent price to those who could explain and thoroughly illustrate the subject, instead of igniting the powder by throwing cold water upon it.

"J. V. R of N. Y."—Inertia means the passive nature of water.

"G. G. of Mass."—Your papers were sent to you last week.

"A. M. P. of Pa."—Get a steam engine by all means, you will find it the most economical in your part of the world.

"E B. of Connecticut."—We are much obliged to you for the pamphlet on the pendulum engine, and shall give it due attention Is it at present in fall and economical operation?

"J. L. of Michigan."—Get an engraving published in the "Scientific American." It will cost only $6, and the block yours which will answer afterwards for hand-bills &c.

"S. W. McA. of Va."—We can furnish a cut of your Lathe for $7.

"M. J. of Geo."—No oscillating engines are used here. There is some little prejudice against them.

"J. H. G. of N. C."—Of what use would it be to employ two wheels, when the same object can be obtained by one. The less friction the better, all clear gain of power.

"W. M. Davis of Maine."—Your communication is unavoidably delayed untill next week.

"J. C. of Mass."—The papers of your dredging apparatus will be fowarded in a few days. They have required much writing.

"M. C. of Ala."—You shall hear from us again. Your Table is excellent.

"R. McQ of Texas."—You will find something to suit you on the last page.

"R. S. I. of S. C."—We are not able to give the exact proportion of ingredients at present, but may soon.

"Inventor's" article is inadmissible. Nothing personal or abusive can find a place in our columns

The Western Journal.

We have received No. 5 of this valuable magazine, published at St. Louis, by Travers and Risk. It contains an excellent article on the Geology of the Mississippi valley, and another on steam navigation to China.

Holden's Magazine.

We have received the June No. of the above Magazine. Its contents are as usual excellent The second volume commences with the July number, and is to be illustrated with splendid engravings.

Universal History.

No. 3 of this valuable work is just published by Graham, Tribune buildings, price 25 cents. This number treats of Egyptian works of art and on that account is very valuable, as the remains of Egypt's ancient greatness will be a subject of interest to all while man exists on the face of the earth.

Every Man his own Cobbler.

Scores of our neighbors are now clamping along the streets in shoes of their own soleing. Mr. Armstrong, William street, this City, has established an agency where soles are purchased by the public, and also a composition for attaching them to shoes and boots. A pair of either with foundations like a sieve, may be rendered by the new process warm and water-tight in five mintues.

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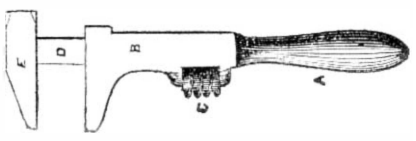

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A, is the handle; B, the stock; C, the screw; D, the slide, and E, the head.

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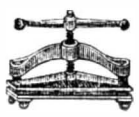

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Worcester, Mass., April 11, 1848. a22 3m

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2 1-2	17	5 1-2	40	9 1-2	73
2 3-4	19	6	45	10	80
3	20	6 1-2	49	10 1-2	85
3 1-2	26	7	57	11	90
3 3-4	28	7 1-2	58	11 1-2	95
4	29	8	63	12	100
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To Mill Owners.

HAVILAND & TUTTLE'S Patent Centre Vent Pressure Water Wheel.—These wheels are now in successful operation in many towns in Maine, Massachusetts, and Rhode Island, and are found to surpass in power and facility of adaptation any water wheel now in use. This wheel was awarded the silver medal at the Fair of the American Institute recently held in New York and a diploma at the Mechanics' Fair in Boston.

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For the Scientific American.

Axioms to be observed in making Copal Varnishes.

The more minutely the gum is run, the greater the quantity and stronger the produce. The more regular and longer the boiling of the oil and gum together, the freer the varnish will work. When the mixture of oil and gum is too suddenly brought to string by strong heat, the varnish will require more than a just proportion of turpentine to thin it, whereby its oily and gummy quality is reduced, which renders it less durable, and it will not flow so well in laying on. The greater the proportion of oil used in varnishes, the less liable are they to crack, because tougher and softer. By increasing the proportion of gum, the thicker will be the stratum of varnish, the firmer it will set and the quicker dry. When varnishes are perfectly new and must be applied before they are of sufficient age, they should be left thicker than if kept a proper time before using.—African copal possesses the best qualities of elasticity and transparency. Too much driers in varnish render it unfit for clear and delicate colors. Copperas does not combine with, but only hardens varnish. Turpentine improves by age and varnish by being kept in a warm place. All copal and oil varnishes should be kept some time after they are made before they are used.

For the Scientific American.

Composition for Welding Cast Steel.

Take ten parts of borax and one part of sal ammoniac; grind them together and fuse them in a metal pot over a clear fire taking care to continue the heat until all spume has disappeared from the surface. When the liquid appeais clear, the composition is ready to be poured out to cool and concrete, when it is ground to a fine powder and is ready for use. To use this composition the steel is put into the fire and raised to a bright refrangible is then dipped among the welding powder and again placed in the fire until it attains the same degree of heat as before, when it is ready to be placed under the hammer.

Method of Bringing out Sculpture upon Alabaster.

This process is founded upon the property which alabaster or sulphate of lime has of being slowly eaten out by cold water, so that the polish is destroyed.

In the first place the sculptures in relief, and all the parts intended to be preserved, are covered with a varnish, insoluble in water composed of wax dissolved in oil of turpentine, mixed with white lead, or rather with a turpentine varnish, to which white lead and a little animal oil has been added to prevent the varnish from hardening and adhering too strongly to the alabaster. This is applied with a soft paint brush, moistened with oil of turpentine, into which it must be dipped every time that varnish is taken. The reserved parts being thus covered, suffer the vessel or ornament to dry for some hours, and then place it in a vessel filled with cold water, and leave it there for 48 hours, or longer if it is thought necessary The varnish is then removed with a fine sponge dipped in varnish of turpentine, and the vessel dried with a soft, and very dry rag. When the vessel is thus cleared of its varnish, and dried, pass over it a new soft brush, dipped in finely powdered plaster. This powder fills the pores of the plaster, which have been attacked by the water, and renders it flat, which brings out the transparent parts of the alabaster in relief.

To clean ornaments and sculptures in alabaster:—wash out any grease spots with oil of turpentine, then put the piece in water, and suffer it to remain until it is freed from its impurities. When you take it out, rub it with a very dry paint brush: let it dry, and pass over it powdered plaster. In this way the piece will be perfectly washed, and will look as though it had just come from the hand of the carver.

To Ornament Picture Glasses With Gold.

The glass must be first washed perfectly clean and dried: then moisten it by breathing on it, or wet it with the tongue, and immediately lay on a leaf of gold, and brush it down smooth. When this is dry, draw any letters or flowers on the gold with Brunswick blacking (a solution of gum asphaltum in spirits of turpentine,) and when dry, the superfluous gold may be brushed off with cotton, leaving the figures entire. Afterwards the whole may be covered with blacking, or painted in any color, while the gold figures will appear to advantage on the opposite side of the glass. This work may be elegantly shaded by scratching through the gold with a steel instrument, (in the end of which many sharp points are formed,) previous to laying on the blacking. Oil paints of any kind may be substituted in the place of blacking, but will not dry so quick.

Phenomena of Light.

The different colored rays of light are not equally luminous—that is to say, do not impress our eyes with equal brilliancy. A piece of finely printed paper placed in yellow light can be read at a much greater distance than in any other color, and from this the light declines on either hand, and gradually fades away in the violet and the red. The light of the sun is accompanied by heat. Dr. Herschel found that by interposing pieces of different colored glass between the sun and a thermometer, that the temperature of the latter was differently affected by different colored glasses. The heat is least in the violet and continually increases as we descend through the colors, the red being the hottest of them all. Late discoveries have shown that every ray of light can produce specific changes in compound bodies. Thus, it is the yellow ray which controls the growth of plants, and makes their leaves turn green; the blue ray which brings about a peculiar decomposition of the iodides and chlorides of silver, bodies which are used in photogenic drawing.—Those substances which phosphoresce after exposure to the sun are differently affected at the different rays—the more refrangible producing their glow, and the less extinguishing them.

Horses.

A horse travels 1200 feet at a walk, in 4½ minutes; at a trot in two minutes; at a gallop in 1 minute.

He occupies in the ranks a front of 40 inches, and a depth of 19 feet; in a stall 3½ to 4½ feet front; and at picket, 3 feet by 9.

Average weight of horses 1000 lbs. each

A horse carrying a soldier and his equipments (say 225 lbs.) travels 25 miles in a day (8 hours.)

A draught horse can draw 1600 lbs. a day. weight of wagon included.

In a horse mill, a horse moves at the rate of 4 feet in a second. The diameter of the track should not be less than 25 feet.

The strength of a horse is equal to that of five men.

The expense of conveying goods at 3 miles an hour per horse teams being 1, the expense at 4½ miles will be 1.33, and so on, the expense being doubled when the speed is 5 1-8 miles per hour.

New use of Waste Steam.

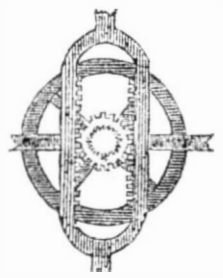
A manufacturer who has a steam engine which discharges much waste steam, conceived the idea of using it to raise pine apples. The steam was introduced under the roots of the plants, and the heat and moisture united, acted so powerfully that the pine apples soon ripened; while the body of the plant being exposed all day to the open air, assumes a healthy and agreeable taste, which renders the fruit far superior to those which have been ripened in hot houses.

Utility of Blue Glass for Hot Houses.

In vegetable growth the blue rays are the most active, the red ones the least so. Hence the benefit of employing glass stained blue or green for the roofs of hot houses.

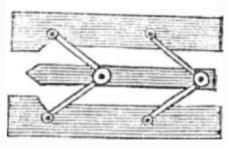
MECHANICAL MOVEMENTS.

Continuous Circular Motion.



In this figure the ratchet wheel is fixed on the shaft seen in the centre; but the spur wheel to which a clip is attached, runs loose on the same shaft, so that its rotary motion will only act in one direction, namely, when the click holds on the ratchet. At the back of the spur wheel is another similarly arranged, with a click, and ratchet wheel, and geering into the opposite rack, which is not on the same plane. Thus, the alternate traverse of the perpendicular rack-piece will produce continuous circular motion in the shaft which carries the wheels.

Parallel Rule.



Draughtsmen have frequently to use an instrument as a guide to draw parallel lines. The one in most common use for that purpose, is two rules joined together by the same joints as are represented in the above engraving The above instrument is superior to the double rule, for the drawing of a greater number of parallel lines, inasmuch as when the joints are closed, the instrument occupies scarcely any more space than the double rule, yet it can guide to double the number of lines without being shifted.

To prevent the ravages of Moths.

The ravages of the woolen moth may be prevented by the use of any of the following substances; tobacco, camphor, and perhaps the most agreeable for wearing apparel, a mixture of one ounce of cloves, one ounce of rhubarb, and one ounce of cedar shavings, tied up in a bag, and kept in a box or drawer. If the substance be dry, scatter it in the folds of the cloth, carpet, blankets. or furs: if liquid scatter it freely in the boxes, or on the cloth or wrapper, laid over and around it.

Hints to Lovers of Flowers.

A most beautiful and easily attained show of evergreens may be had by a very simple plan, which has been found to answer remarkably well on a small scale. If geranium branches taken from luxuriant and healthy trees just before the winter sets in, be cut as for slips, and immersed in soap water, they will, after drooping for a few days, shed their leaves, put forth fresh ones, and continue in the finest vigor all winter. By placing a number of bottles thus filled, in a flower basket, with moss to conceal the bottles, a show of evergreens is easily insured for the whole season. They require no fresh water.

Etching.

Heat the large blade of your pocket knife, and rub it with a piece of beeswax, so as to give it a thin coating When cool take a large needle and scratch letters through the wax. Drop on them two drops of water, and one of nitric acid, and in one minute the letters will be quite deeply etched in the steel.

Cheap Roof.

If a shingle roof is covered with cotton cloth, and then painted, and sand laid upon the top of the paint and all suffered to dry, a roof will be made thereby to last twice as long as without the said covering Cheap boards, will answer as well as shingles and the cloth will keep the roof perfectly tight from leaking.

The weight of platinum, the heaviest known body in nature, is 435,000 times greater, bulk for bulk, than that of hydrogen gas, the lightest known body in nature.

Corn Cob.

It is believed by many, that there is very little nutriment in corn cobs; but as one proof to the contrary, we will adduce the following. A farmer in Virginia, a few years since, afraid his corn crop would not be sufficient to last through the winter, determined to try, and did winter his horses on corn cobs alone, pounded in a common hominy mortar with his own hands. They received no other substance except long forage, as hay and fodder. Upon this they did their work and were in very good condition.—*C. N. Bement.*

Among the evidences of the nutriment contained in the corn cob, the experiment, by distillation, of Mr. Minor of Virginia, showed that five bushels of cobs contained four gallons of spirit. He also found other nutritive matter than the saccharine, as mucillage and oils.

Vegetable Flights.

The distribution of vegetable species is secured by a variety of means. In some instances the seeds are furnished with light silky plumes, or wings, which flutter in the air, and are transported afar by the winds—others, by means of a viscous, hard, impermeable envelope, float on rivers, and descend their courses without suffering the least change, or losing their germinating power There are seeds again of a sufficiently coherent texture, to resist the digestive action of the stomach of animals that eat fruits that contain them, and which are consequently found deposited at great distances from the plant that produced them.

New Fruit.

A new fruit has been introduced at Charleston, S. C. from Japan. It is an evergreen, and bears flowers of a delightful almond-like fragrance, twice a year Last summer, the fruit in small quantity came to maturity in July This year it bore more luxuriantly, and the fruit is now ripe. It is of a rich orange color, about the size and shape of the nectarine, although a little more elongated.

Bottling Asparagus.

A very delicate dish is procured by placing a glass bottle over an asparagus head just as it breaks the ground. The plant rapidly fills the bottle, which is then broken and a large head, tender, delicate, and compact as a cauliflower, is secured.

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